Idaho National Engineering and Environmental Laboratory

INEEL's Nuclear Energy Mission — Taking Shape

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INEEL

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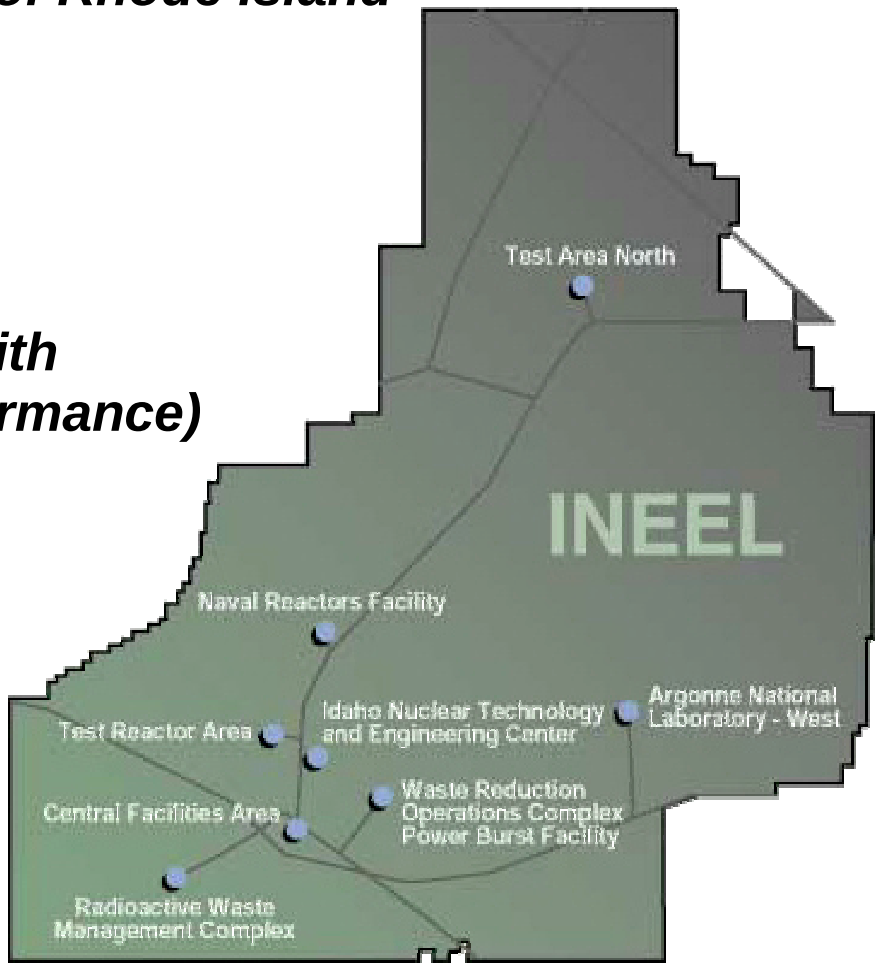
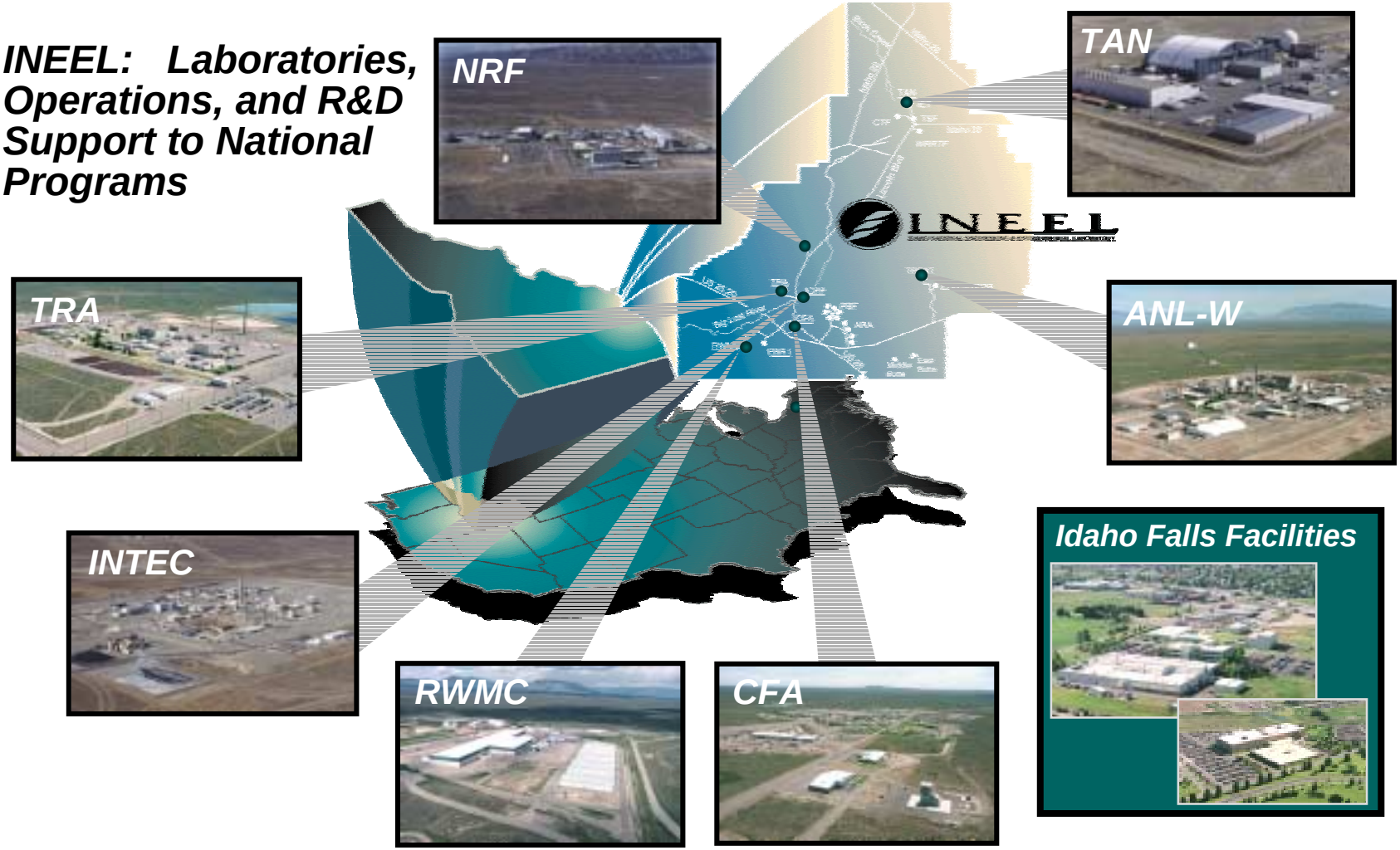
Part of the DOE National Lab System

The INEEL is located on 889 square miles (569,135 acres) and is approximately 85% the size of Rhode Island

- ***Established in 1949***
- ***One of 9 national laboratories in the country***
- ***$3 billion contract (five-years with five-year option based on performance)***
- ***6,000 employees***
- ***Nine primary facilities***
- ***A National Environmental Research Park***



INEEL: Laboratories, Operations, and R&D Support to National Programs



Key Operational Capabilities

- *Design, analysis, construction, and operation of complex nuclear and non-nuclear facilities*
- *Integrated systems engineering solutions for large complex systems and environmental problems*
- *Technology development and deployment in applied environmental science and engineering*
- *Modeling, testing, and validation of first-of-a-kind engineered systems*
- *Unique technical capabilities in radiochemistry, radiation dosimetry, and radio bioassay*

A Long History of Service

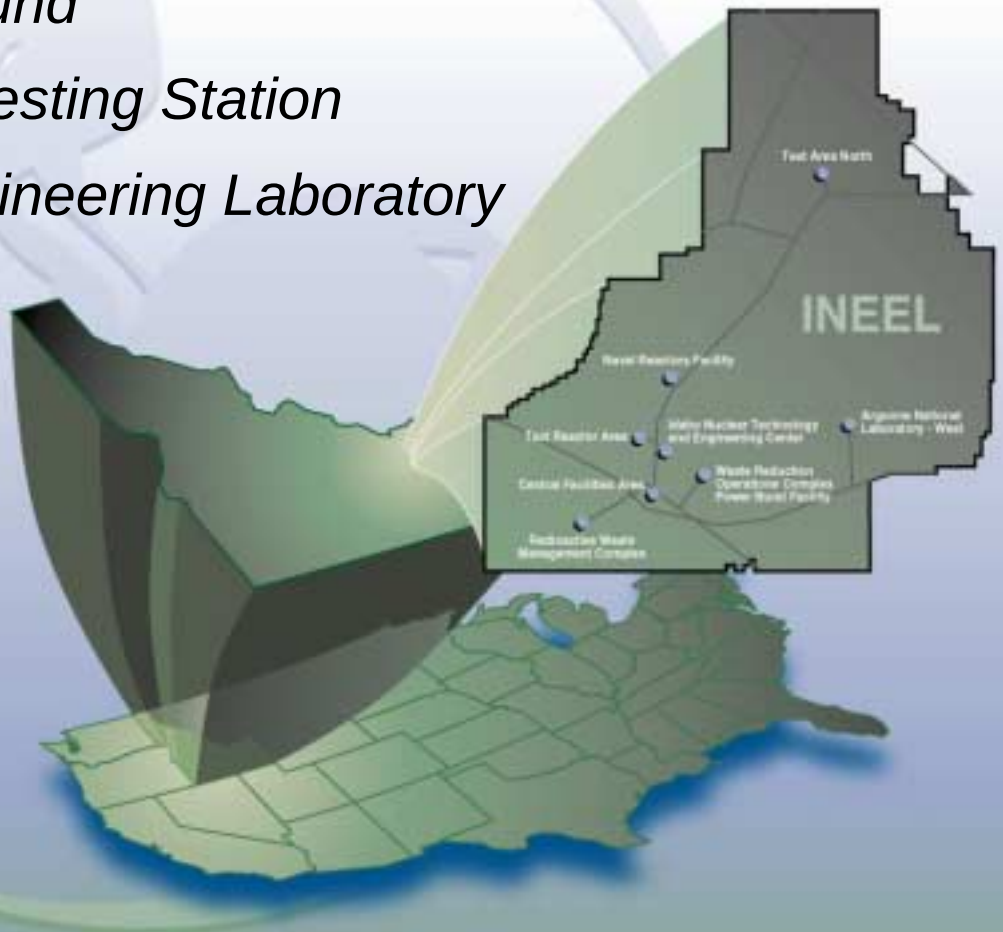
1943 *Naval Proving Ground*

1949 *National Reactor Testing Station*

1974 *Idaho National Engineering Laboratory*

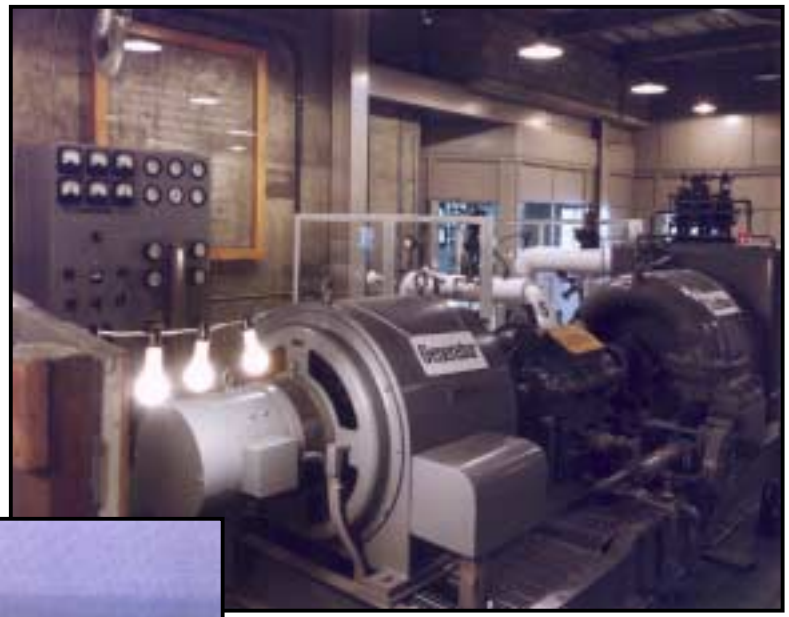
1997 *Idaho National Engineering and Environmental Laboratory*

2002 *National Center for Nuclear Energy Research and Development*



A Proud Heritage of Nuclear Excellence

- *World's first generation of electricity from nuclear power*
- *First breeder reactor*
- *Development of Nuclear Navy propulsion systems*



Heritage (continued)

- *Nuclear airplane project*
- *Design and construction of 52 mostly first-of-their-kind nuclear reactors*
- *Safety of large commercial power reactors*
- *Nuclear science and technology contributions*

INEEL's Entry into Additional Missions

- *Became a multi-program lab in 1977*
- *Broadened our perspective into energy, environmental and national security*
- *Responded to cleanup imperatives*
- *Built multipurpose facilities*

Radioactive Waste Management Complex

INEEL Research Center

Our Return to the Nuclear Energy Mission

Three Key Events Signaled the change:

- *Designation of ANL and INEEL as Lead Labs for Nuclear Reactor Technology*
- *Completion of a new National Energy Policy*
- *Designation of the DOE Office of Nuclear Energy (DOE NE) as our Lead Program Secretarial Office (LPSO)*

Lead Labs for Nuclear Reactor Technology

"…retain the capability to perform long-term nuclear reactor R&D to keep a viable nuclear option"

July 17, 1999

– Bill Richardson

ANL-W Fuel Conditioning Facility

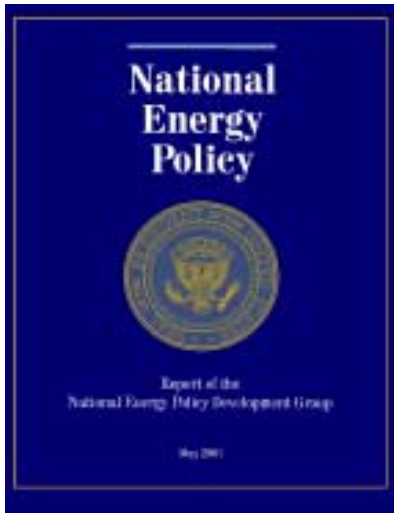
INEEL Test Reactor Area

Completion of a National Energy Policy

Recommends,
"the expansion of nuclear energy in the U.S.",
and that

"the U.S. should consider technologies…to develop reprocessing and fuel treatment…that are cleaner, more efficient, less waste-intensive, and more proliferation-resistant"

May 16, 2001



– Vice President Cheney,
Secretaries of State, Energy, Transportation, Interior, Commerce, Treasury and Agriculture,
Heads of EPA and OMB



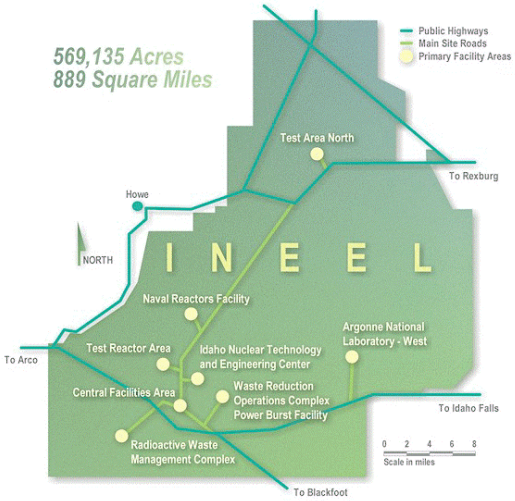


Designation of INEEL as a DOE NE Lab

"First, INEEL will be the central command center for the federal government's Generation IV nuclear systems research."

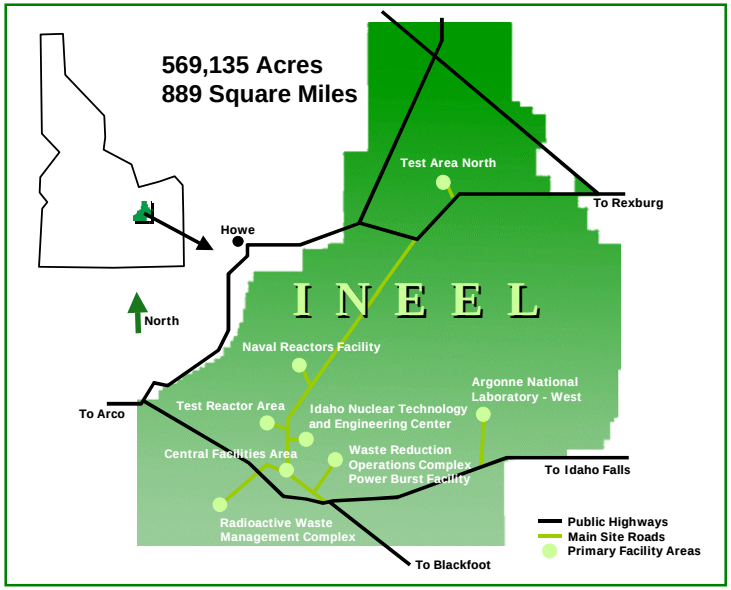
Second, an "Idaho Advanced Fuel Cycle Technology Initiative will be the focal point for developing and demonstrating separation technologies for treating and reducing spent nuclear fuel and high level waste."

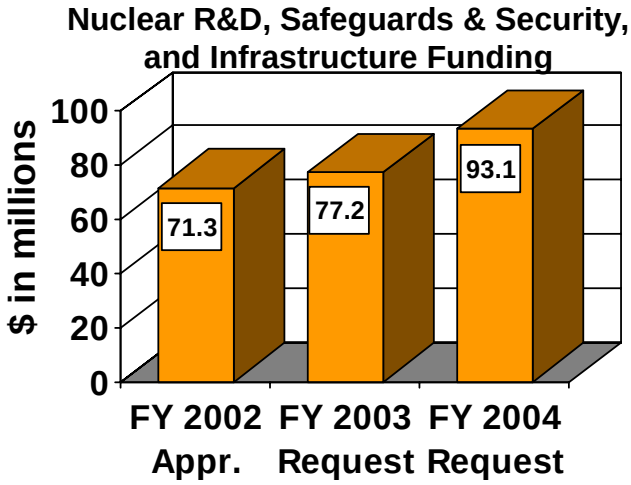
– Spencer Abraham



July 15, 2002

Revitalization of INEEL





- *On July 15, 2002, Secretary Abraham announced a major mission realignment for INEEL*
- *INEEL will become a world-class nuclear laboratory focusing on R&D such as:*
  - *Generation IV nuclear energy systems and advanced fuel cycles*
  - *Advanced space nuclear power and propulsion systems*
- *Success in environmental cleanup will be essential to the growth in the nuclear program at Idaho*

Idaho Falls Facilities

- *Science, engineering and computing*
- *Laboratories and offices*
- *Administration and business functions*
- *Non-nuclear laboratory programs*

Test Reactor Area (TRA)

- *Advanced Test Reactor*
- *STAR*
- *Laboratories*
- *Hot cells*

Advanced Test Reactor

Capabilities

- *Irradiation Services*
- *Isotope Production*
- *Nuclear Reactor Operations*
- *Radioanalytical Measurement*
- *Analytical Radiochemistry*

Idaho Nuclear Technology and Engineering Center (INTEC)

- *Remote Analytical Laboratory*
- *Shielded Decontamination Facility*
- *Spent nuclear fuel storage facilities*

Test Area North (TAN)

- *Specific Manufacturing Capability Project*
- *Fuel examination facility*
- *Hot cells*

Central Facilities Area (CFA)

- *Remote service facilities*
- *Administration offices and warehousing*
- *Calibration laboratories*
- *Craft shops and vehicle maintenance*
- *Medical and fire protection facilities*

Radioactive Waste Management Complex (RWMC)

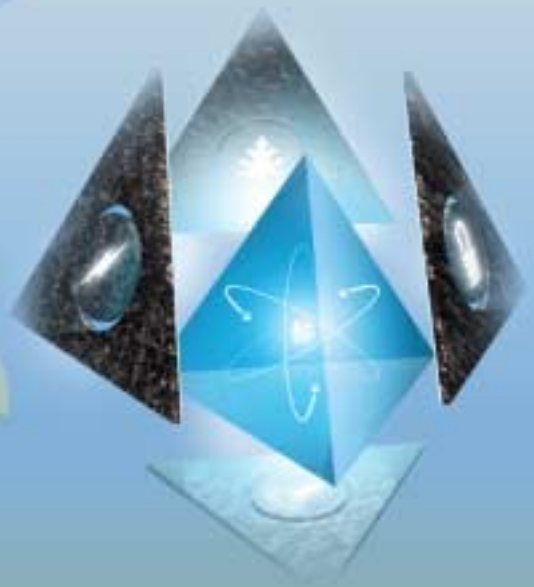
- *Transuranic and low-level waste storage*
- *Stored Waste Examination Pilot Plant*
- *Waste characterization and packaging*
- *Nondestructive examination and analysis*

Argonne National Laboratory-West (ANL-W)

Naval Reactors Facility (NRF)

Vision

The INEEL – the leading U.S. research laboratory in nuclear science and engineering – providing the next generation technology for the United States and the world – recognized for providing solutions to energy, security, and scientific challenges.



Mission

The INEEL's principle mission is to develop and demonstrate advanced nuclear technologies that provide clean, abundant, affordable and reliable energy. We also conduct basic and applied research to protect our nation's critical infrastructure and enhance our national security, facilitate DOE's legacy cleanup and stewardship responsibilities, and advance energy-related sciences.

Energy Security

Nuclear Energy in the forefront

- Generation IV Leadership
- Advanced Fuel Cycle Initiative
- Yucca Mountain Support
- ATR and TRA Upgrades
- NE/NASA Nuclear Space Initiative

Alternative/Renewable Energy

- Biomass/whole crop utilization
- Hydrogen production and infrastructure

Science

Fundamental Science That Supports DOE Missions

- *Nuclear Energy Research Initiative; EM Science Program*
- *Nanoscience and engineering*
- *Climate change science and technology*

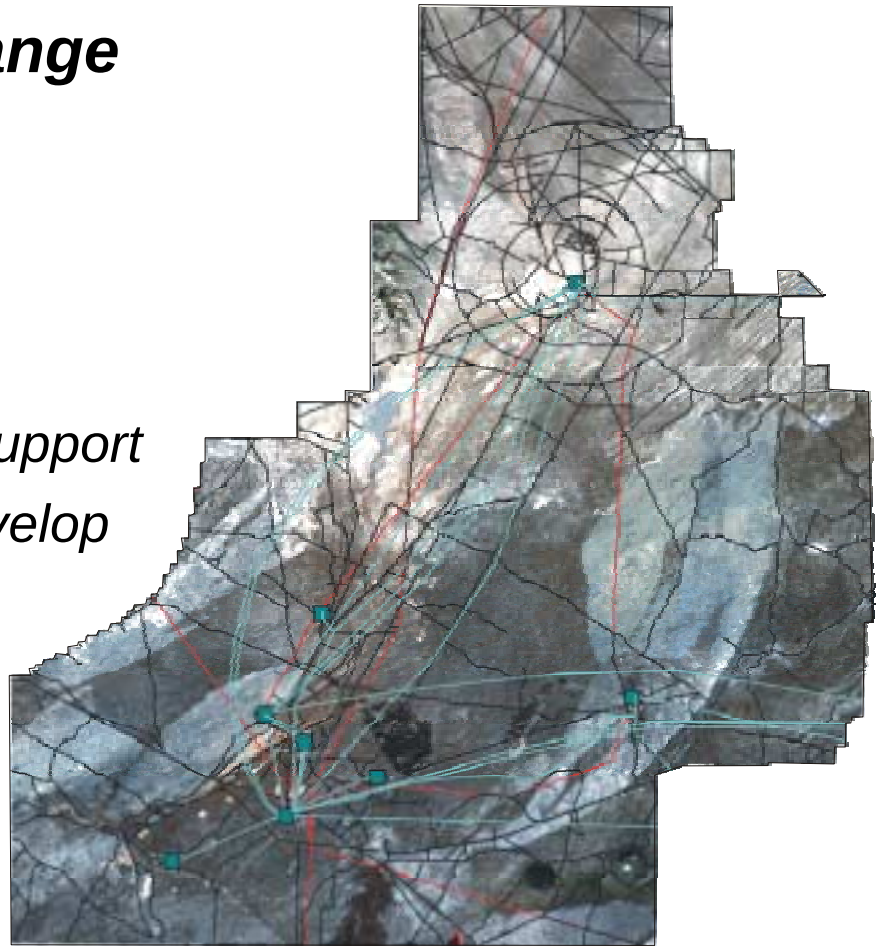
Strengthened Science Capabilities

- *Advanced scientific computing*
- *INEEL Geocentrifuge Research Lab*
- *Subsurface Geosciences Lab*

National Security

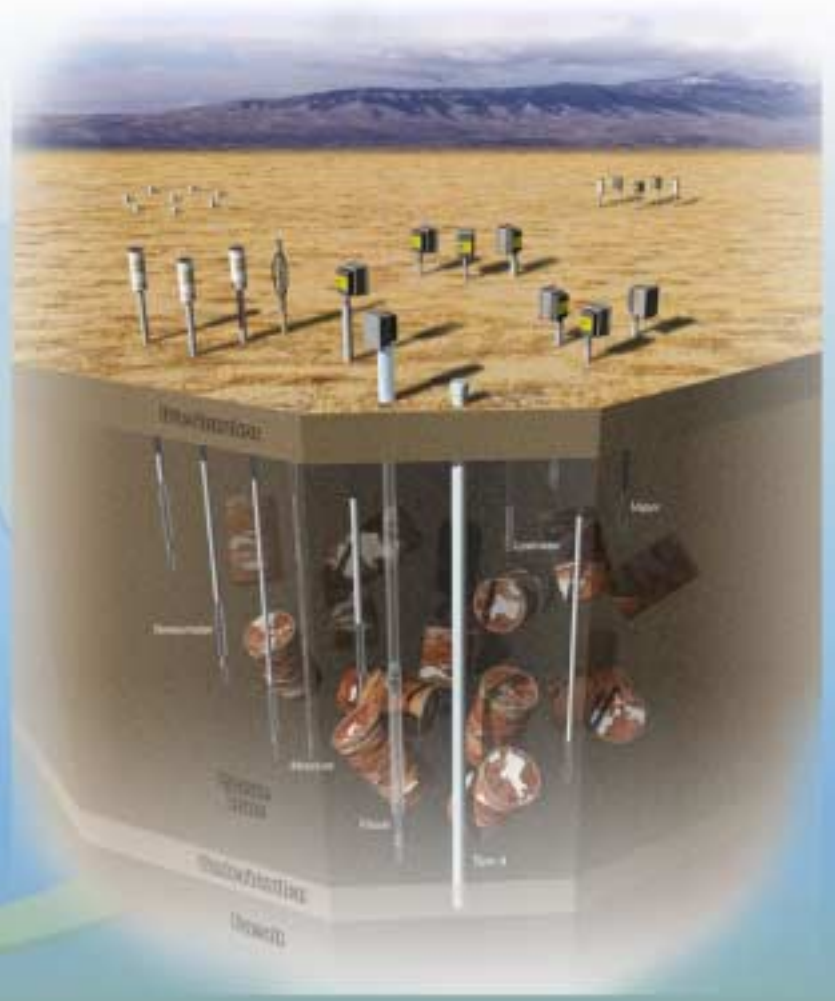
Critical Infrastructure Test Range

- *Supervisory Control and Data Acquisition Test Bed*
- *Physical security, cyber, and wireless test beds*
- *Homeland Security and DOD support*
- *Leverage SMC expertise to develop and demonstrate light-weight armor products*



Facilitate DOE's Legacy Cleanup

- *Apply science, engineering and technology to address DOE's environmental cleanup challenges*
- *Apply science, engineering and technology to address the nation's long-term stewardship challenges*



INEEL's Nuclear Mission Summary

- *INEEL is returning to a nuclear energy mission*
- *The new mission is focused on:*
  - *International leadership*
  - *Innovation in nuclear energy systems to meet future needs*
  - *A new look at advanced fuel cycles to better manage waste*
- *Planning is underway for major activities in:*
  - *Generation IV program*
  - *Advanced Fuel Cycle Initiative*